

## I CLAIM:

1. An apparatus for separating a slurry containing intermixed particulate materials of different specific gravity comprising:

5 a centrifuge bowl having a bottom, a peripheral wall and an open mouth and mounted for rotation about a longitudinal axis so as to rotate the peripheral wall around the axis;

a stationary feed duct for feeding the materials to the bowl, the duct extending through the open mouth of the bowl generally along the axis to a bottom feed mouth of the duct adjacent a bottom of the bowl;

10 the duct and the bowl being arranged so that the material pass from the bottom of the bowl over the peripheral wall to cause a heavier portion of the materials to collect on the peripheral wall while a lighter portion of the materials in the slurry escapes over the open mouth;

and an accelerator attached at the bottom of the bowl for rotation with  
15 the bowl and accelerating the materials from the feed duct;

the accelerator comprising a top plate having a central hole arranged to receive the materials from the bottom feed mouth of the duct so that the materials pass through the central hole to a position underneath the plate;

a plurality of vanes underneath the top plate at angularly spaced  
20 positions around the axis of the bowl with each vane extending generally outwardly from an inner end underneath the hole to an outer end adjacent the peripheral wall;

such that the materials passing through the hole are confined underneath the top plate and are guided outwardly and accelerated angularly by the rotation of the bowl.

2. The apparatus according to Claim 1 wherein the accelerator  
5 includes a deflector plate underneath top plate and generally underneath the hole lying generally in a radial plane relative to the axis of the bowl and arranged to engage the materials passing through the hole so as to deflect the materials from an axial direction passing through the hole to a radial direction.

3. The apparatus according to Claim 2 wherein the deflector plate  
10 has a raised center lying on the axis and declines outwardly and downwardly therefrom.

4. The apparatus according to Claim 3 wherein the vanes each have an inner nose underneath the hole and projecting radially inwardly from an outer edge of the deflector plate with each vane extend outwardly from the nose  
15 leaving a center area of the deflector plate underneath the hole free from the vanes.

5. The apparatus according to Claim 2 wherein the bowl has a discharge opening in the bottom wall and wherein the deflector plate has a bottom surface spaced from a bottom wall of the bowl leaving a discharge area underneath the deflector plate.

20 6. The apparatus according to Claim 5 wherein the vanes extend to the bottom wall so that a bottom surface of at least some of the vanes sits on the bottom wall of the bowl and wherein the deflector plate is connected to and intersects the vanes at a position part way along the height thereof.

7. The apparatus according to Claim 6 wherein the bottom wall of the bowl includes a central discharge opening and a surface of the bottom wall substantially frusto-conical so as to be inclined downwardly and inwardly toward the discharge opening and wherein the vanes each have a bottom surface connected to the surface of the bottom wall with the bottom surface of the vanes lying in an imaginary conical surface.

8. The apparatus according to Claim 1 wherein the vanes each have an inner nose underneath the hole and extend outwardly from the nose leaving a center area underneath the hole free from the vanes.

9. The apparatus according to Claim 1 wherein the vanes each have a top surface connected to a bottom surface of the top plate.

10. The apparatus according to Claim 1 wherein each vane increases in dimension angularly as it increases in distance radially.

11. The apparatus according to Claim 1 wherein each vane is curved from the nose outwardly and in a trailing direction relative to the direction of rotation.

12. The apparatus according to Claim 1 wherein the accelerator including the top plate, the vanes and the deflector plate is molded integrally from a resilient plastics material.

13. The apparatus according to Claim 1 wherein there is provided on the peripheral wall at least one annular collection recess area having a lower side wall and an upper side wall extending outwardly away from the axis to a base for collecting the heavier portion of the material.

14. The apparatus according to Claim 13 including plurality of fluid injection ports arranged at spaced positions around the recess for fluidizing the material in the recess.

15. An accelerator for use in a centrifuge bowl in accelerating the materials from a feed duct extending into the bowl comprising:

a molded body;

the molded body having a top plate with a central hole arranged to receive the materials from the bottom feed mouth of the duct so that the materials pass through the central hole to a position underneath the plate;

10 the molded body having a plurality of vanes underneath the top plate at angularly spaced positions around the axis of the bowl with each vane extending generally outwardly from an inner end underneath the hole to an outer end at an outer edge of the top plate;

the molded body having fasteners at a bottom surface arranged to be fastened to a bottom wall of the bowl with the top plate across the bottom of the bowl.

16. The accelerator according to Claim 15 wherein the molded body includes a deflector plate underneath top plate and generally underneath the hole.

17. The accelerator according to Claim 16 wherein the deflector plate has a raised center and declines outwardly and downwardly therefrom.

18. The accelerator according to Claim 16 wherein the vanes each have an inner nose underneath the hole and projecting radially inwardly from an

outer edge of the deflector plate with each vane extend outwardly from the nose leaving a center area of the deflector plate underneath the hole free from the vanes.

19. The accelerator according to Claim 16 wherein the deflector plate has a bottom surface spaced from the bottom surface of the molded body  
5 leaving a discharge area underneath the deflector plate.

20. The accelerator according to Claim 16 wherein the vanes extend to the bottom surface and wherein the deflector plate is connected to and intersects the vanes at a position part way along the height thereof.

21. The accelerator according to Claim 20 wherein the vanes each  
10 have a bottom surface lying in an imaginary surface which is conical about a longitudinal central axis of the accelerator.

22. The accelerator according to Claim 15 wherein the vanes each have an inner nose underneath the hole and extend outwardly from the nose leaving a center area underneath the hole free from the vanes.

15 23. The accelerator according to Claim 15 wherein the vanes each have a top surface connected to a bottom surface of the top plate.

24. The accelerator according to Claim 15 wherein each vane increases in dimension angularly as it increases in distance radially.

25. The accelerator according to Claim 15 wherein each vane is  
20 curved from the nose outwardly and in a trailing direction relative to the direction of rotation.

26. An accelerator for use in a centrifuge bowl in accelerating the materials from a feed duct extending into the bowl comprising:

a molded body;

the molded body having a top plate with a central hole arranged to receive the materials from the bottom feed mouth of the duct so that the materials pass through the central hole to a position underneath the plate;

5           the molded body having a plurality of vanes underneath the top plate at angularly spaced positions around the axis of the bowl with each vane extending generally outwardly from an inner end underneath the hole to an outer end at an outer edge of the top plate;

          the molded body having a deflector plate underneath top plate and  
10   generally underneath the hole;

          the vanes each having an inner nose underneath the hole and projecting radially inwardly from an outer edge of the deflector plate with each vane extending outwardly from the nose leaving a center area of the deflector plate underneath the hole free from the vanes;

15           wherein the vanes each have a bottom surface lying in an imaginary bottom surface of the molded body which is conical about a longitudinal central axis with fasteners arranged to be fastened to a bottom wall of the bowl;

          the deflector plate having a bottom surface spaced from the imaginary bottom surface.

20           27.   The accelerator according to Claim 26 wherein the vanes each have a top surface connected to a bottom surface of the top plate.

          28.   The accelerator according to Claim 26 wherein each vane increases in dimension angularly as it increases in distance radially.

29. The accelerator according to Claim 26 wherein each vane is curved from the nose outwardly and in a trailing direction relative to the direction of rotation.

30. The accelerator according to Claim 26 wherein the deflector  
5 plate has a raised center and declines outwardly and downwardly therefrom.